# SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for the

# COLORADO RIVER DRAINAGE BASIN

February 1, 1942

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Issued by the
United States Department of Agriculture
Soil Conservation Service
Division of Irrigation
In Cooperation with
The Colorado Agricultural Experiment Station
Colorado State College
Fort Collins, Colorado

February 10, 1942

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for
COLORADO RIVER BASIN
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The following data pertaining to snow surveys and irrigation water-supply forecasts are provided by the Division of Irrigation, Soil Conservation Service, U. S. Department of Agriculture, in cooperation with State departments, other federal bureaus and local organizations. The snow measurements are made principally by field personnel of the following Federal Government organizations: Forest Service, National Park Service, Geological Survey, Bureau of Reclamation, Indian Service; and the Utah Agricultural Experiment Station. This work is otherwise conducted cooperatively with the State Engineers of Wyoming, Utah, and Colorado, U. S. Geological Survey, Utah and Colorado Agricultural Experiment Stations, and various municipalities, irrigation associations, power companies, and others. Precipitation records are supplied by the U. S. Weather Bureau.

## SUMMARY OF FEBRUARY 1 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHEDS

| WATERSHEDS | Snow Depth | | | Water Content | | | Number Courses in Average | Snow Density | | | 1942 Water Content in percent of | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seven Year Avg.* | 1941 | 1942 | Seven Year Avg.* | 1941 | 1942 | | Seven Year Avg.* | 1941 | 1942 | Seven Year Avg.* | 1941 |
| | In. | In. | In. | In. | In. | In. | | Percent | Percent | Percent | | |
| COLORADO RIVER | | | | | | | | | | | | |
| Colorado River** | 32.4 | 28.0 | 31.6 | 7.3 | 5.5 | 6.7 | 20 | 23 | 20 | 21 | 92 | 122 |
| Yampa River | 41.7 | 35.0 | 43.8 | 9.8 | 7.8 | 9.4 | 4 | 24 | 22 | 21 | 96 | 120 |
| White River | 39.4 | 37.0 | 39.6 | 10.2 | 9.0 | 10.2 | 2 | 26 | 24 | 26 | 100 | 113 |
| Gunnison River | 36.7 | 41.0 | 37.1 | 8.6 | 9.8 | 8.6 | 11 | 23 | 24 | 23 | 100 | 88 |
| Dolores River | 28.7 | 35.9 | 23.3 | 6.1 | 8.2 | 5.2 | 3 | 21 | 23 | 22 | 85 | 63 |
| San Juan River | 34.7 | 48.1 | 28.9 | 8.8 | 12.6 | 7.1 | 5 | 25 | 26 | 25 | 81 | 56 |
| Gila River | 10.3 | 15.8 | 8.3 | 2.7 | 4.3 | 2.6 | 9 | 26 | 27 | 31 | 96 | 60 |

*Some for shorter periods.
**Above Grand Junction, Colo.

## PRECIPITATION DATA

| WATERSHED | STATE | Precipitation October 1 to January 31 | Departure from Normal | Precipitation January | Departure from Normal |
|---|---|---|---|---|---|
| | | Inches | Inches | Inches | Inches |
| Colorado | Colorado | 8.27 | +2.64 | 1.20 | -0.36 |
| Green | Wyoming | 4.76 | +1.94 | 0.88 | +0.18 |
| San Juan | New Mexico | 4.40 | +1.11 | 0.24 | -0.57 |
| Gila | Arizona | 5.81 | +0.87 | -- | -1.00 |
| Gila | New Mexico | 3.71 | +0.16 | 0.46 | -0.30 |

## WATER SUPPLY OUTLOOK

The accumulated precipitation over the Colorado River drainage since October first is much above normal in Colorado; for the Green in Wyoming the excess is about 2 inches and for the San Juan one inch. On the Gila drainage for this period the excess was less than an inch with January precipitation below normal in New Mexico and Arizona. During January the precipitation was below normal except on the Green where the excess was only 0.2 inch.

COLORADO RIVER AND TRIBUTARIES IN COLORADO. Snow cover and water content over the Colorado River drainage as of February first, are approximately the average for the past six years. For the headwaters of the Colorado, above Grand Junction, the present water content of the snow is nearly 25 percent greater than a year ago and for the Yampa and White approximately 20 percent more. On the Gunnison drainage it is less than it was a year ago but equal to the average over the past six years. On the Dolores River the water content of the snow is about 40 % less than a year ago and 15 % less than the average.

SAN JUAN RIVER. Snow cover on this watershed is only about one half as much as last year and 20 percent less than past seven years average.

GILA AND SALT RIVERS. The water content of the snow on the Gila drainage is 60 percent of last year and slightly less than the average over the past four years. In the Salt drainage, the recent surveys indicate the water content of the snow to be similar to that of a year ago and less than the four-year average. Throughout the Colorado drainage the fall and early winter stream flow has been normal or above with reservoir storage improved over that of last year. Soil moisture conditions, particularly mountain area, good. In the Salt River valley the amount of storage is about 87 percent of the total capacity; last year at this time the storage stood at about 50 percent of full capacity. The San Carlos Reservoir on the Gila is now filled to three-quarters of its capacity of 1,285,000 acre-feet and represents the greatest in many years.

At this time the outlook for the coming season's irrigation water supply is encouraging, especially on the main Colorado. Runoff in the tributaries, Dolores, San Juan, and Gila, may be less than normal as indicated by present conditions. Because of the amount of water now held in reservoir storage the prospects for adequate supplies this coming season are relatively good.

# COLORADO RIVER WATERSHED

Summary of Federal and State Cooperative Snow Surveys
Issued February 10, 1942, at Fort Collins, Colo.

| No. | Main Drainage and Snow Course | Local Drainage | Location | | | Elev. | National Forest | Feb. 1 Snow Cover Measurements | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | State | Locality | Description | | | Av. Snow Depth | | | Av. Water Content | | |
| | | | | | | | | Av.@ | 1941 | 1942 | Av.@ | 1941 | 1942 |
| | COLORADO RIVER (Above Grand Junction) | | | | | | | In. | In. | In. | In. | In. | In. |
| 7 | Park View* | Willow Cr. | Colo. | 7mi.SE.Rand | 24-5N-78W | 9200 | Routt | 24.2 | 20.2 | 24.5 | 5.0 | 3.5 | 4.4 |
| 12 | Phantom Valley | Colorado R. | " | 11 mi.N.Grand L. | 7-5N-75W | 9300 | Ry.Mtn.N.P. | 24.0 | 18.9 | 23.4 | 5.5 | 3.6 | 4.3 |
| 16 | Berthoud Pass | Fraser R. | " | 4mi.S.West Port. | 35-2S-75W | 9700 | Arapaho | 39.7 | 32.5 | 34.7 | 8.9 | 6.0 | 8.0 |
| 19 | Tennessee Pass* | Eagle River | " | Tennessee Pass | 21-8S-80W | 10200 | Cochetopa | 24.0 | 21.2 | 26.4 | 4.2 | 3.1 | 5.1 |
| 33 | Ind. Pass Tunnel | Lincoln Gulch | " | W.Port.Tunnel | 30-11S-82W | 10200 | Holy Cross | 38.3 | 34.6 | 39.9 | 9.6 | 7.3 | 8.5 |
| 34 | N.Lost Trail Cr. | Crystal R. | " | 3mi.E.Marble | 20-11S-87W | 9200 | " " | 31.5 | 30.5 | 28.2 | 7.3 | 7.4 | 6.8 |
| 37 | M.Fork Camp Gr. | Williams Fk. | " | 13mi.N.Dillon | 16-3S-77W | 9000 | Arapaho | 27.4 | 24.4 | 32.5 | 5.8 | 4.1 | 6.6 |
| 44 | Fiddler Gulch | Eagle River | " | 2mi.E.Mitchell | 1-8S-80W | 11000 | Holy Cross | 35.8 | 35.5 | 38.7 | 7.5 | 6.2 | 8.4 |
| 45 | Nast | Frying Pan R. | " | 23mi.SE.Basalt | 1-9S-83W | 8700 | " " | 20.4 | 17.8 | 15.9 | 4.1 | 3.1 | 3.3 |
| 54 | Maroon Lake | Maroon Creek | " | 8mi.SW.Aspen | 7-11S-85W | 9300 | " " | 33.4 | 30.9 | 32.9 | 7.4 | 6.4 | 7.3 |
| 56 | Mesa Lakes | Mesa Creek | " | 15mi.E.Palisade | 35-11S-96W | 10000 | Grand Mesa | 39.6 | 53.6 | 45.2 | 9.8 | 13.4 | 11.0 |
| 59 | Lulu | Lulu Creek | " | 14mi.N.Grand L. | 25-6N-76W | 10200 | Ry.Mtn.N.P. | 41.0 | 25.0 | 33.3 | 11.3 | 5.0 | 8.6 |
| 62 | Willow Creek P. | Willow Cr. | " | Willow Cr.Pass | 1-4N-78W | 9500 | Arapaho | 31.3 | 24.8 | 31.8 | 7.0 | 5.1 | 7.1 |
| 64 | N.Inlet Grand L. | N.Inlet Cr. | " | 4mi.NE.Grand L. | 26-4N-75W | 9000 | Ry.Mtn.N.P. | 24.1 | 21.1 | 18.5 | 5.4 | 4.0 | 3.5 |
| 65 | Lake Irene | Beaver Creek | " | 1mi.SW.Milner P. | 8-5N-75W | 10600 | " " " | 47.0 | 34.5 | 44.9 | 12.5 | 7.4 | 10.3 |
| 66 | Thunderbolt Peak | Buchanan Cr. | " | 5mi.E.Monarch L. | 22-2N-74W | 9500 | Arapaho | 40.0 | 28.4 | 30.9 | 9.5 | 6.3 | 4.6 |
| 69 | Arrow | S.Ranch Cr. | " | Arrow | 34-1S-75W | 9900 | " | 26.3 | 17.6 | 24.8 | 4.9 | 1.6 | 5.0 |
| 70 | Lapland | St.Louis Cr. | " | 7mi.SW.Fraser | 16-2S-76W | 9300 | " | 26.0 | 25.2 | 30.6 | 5.1 | 4.2 | 6.8 |
| 79 | Fremont Pass #2 | Blue River | " | Fremont Pass | 2-8S-79W | 11400 | " | 39.0 | 33.3 | 42.3 | 7.8 | 4.8 | 8.1 |
| 91 | Lynx Pass No.2 | Rock Cr. | " | 7 mi.NE.Toponas | 27-2N-83W | 9100 | Routt | 34.5 | 29.7 | 32.8 | 7.7 | 6.9 | 6.3 |
| 96 | Shrine Pass | Blue River | " | Shrine Pass | 15-6S-79W | 10500 | Arapaho | -- | -- | 42.5 | -- | -- | 8.4 |
| 97 | Grizzly Peak | " " | " | 1 mi.W.LovelandP. | 2-5S-76W | 11250 | " | -- | -- | 34.0 | -- | -- | 7.9 |
| | | | | | Average for Drainage | | | 32.4 | 28.0 | 31.6 | 7.3 | 5.5 | 6.7 |
| | YAMPA RIVER | | | | | | | | | | | | |
| 6 | Dry River | Soda Creek | Colo. | 4mi.NE.Steam.Spgs. | 26-7N-84W | 8200 | Routt | 41.8 | 38.4 | 48.4 | 10.0 | 8.2 | 11.7 |
| 8 | Columbine Lodge* | Harrison Cr. | " | Rbt.Ears Pass | 21-5N-82W | 9300 | " | 52.3 | 40.5 | 51.9 | 12.8 | 9.1 | 11.7 |
| 9 | Elk River | IndependenceCr. | " | Columbine | 6-10N-85W | 8700 | " | 38.1 | 31.2 | 42.1 | 8.6 | 7.0 | 7.8 |
| 91 | Lynx Pass No.2* | Morrison Cr. | " | 7mi.NE.Toponas | 27-2N-83W | 9100 | " | 34.5 | 29.7 | 32.8 | 7.7 | 6.9 | 6.3 |
| | | | | | Average for Drainage | | | 41.7 | 35.0 | 43.8 | 9.8 | 7.8 | 9.4 |
| | WHITE RIVER | | | | | | | | | | | | |
| 35 | Burro Mountain | N.Elk Creek | Colo. | 8mi.S.Buford | 15-2S-91W | 9000 | WhiteRiver | 42.8 | 39.6 | 44.9 | 11.1 | 9.2 | 11.4 |
| 36 | Rio Blanco | White River | " | 4mi.NW.TrappersL. | 28-1N-88W | 8500 | " " | 35.9 | 34.3 | 34.3 | 9.2 | 8.8 | 9.0 |
| | | | | | Average for Drainage | | | 39.4 | 37.0 | 39.6 | 10.2 | 9.0 | 10.2 |

*On adjacent drainage
@ Average for period of record

## COLORADO RIVER WATERSHED

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| No. | Main Drainage and Snow Course | Local Drainage | Location | | | Elev. | National Forest | Feb. 1 Snow Cover Measurements | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Av. Snow Depth | | | Av. Water Content | | |
| | | | State | Locality | Description | | | Av.@ | 1941 | 1942 | Av.@ | 1941 | 1942 |
| | | | | | | | | In. | In. | In. | In. | In. | In. |
| | GUNNISON RIVER | | | | | | | | | | | | |
| 18 | Crested Butte | Slate River | Colo. | 3mi.N.Crested B. | 22-13S-86W | 9000 | Gunnison | 34.7 | 39.8 | 30.3 | 6.9 | 7.9 | 6.2 |
| 42 | Marshall Creek | Marshall Cr. | " | Marshall Pass | 24-48N-6E | 10800 | Cochetopa | 31.0 | 34.5 | 30.6 | 7.0 | 7.8 | 6.4 |
| 43 | Poncha Creek* | " " | " | " " | 19-48N-7E | 10500 | " | 25.2 | 33.4 | 23.5 | 6.5 | 7.9 | 6.1 |
| 46 | Park Cone | Taylor River | " | Taylor Park Res. | 19-14S-82W | 9700 | Gunnison | 24.8 | 24.6 | 22.0 | 4.5 | 4.1 | 3.5 |
| 53 | Alexander Lake | Kiser Creek | " | 10mi.N.Cedaredge | 2-12S-95W | 10000 | Grand Mesa | 50.7 | 64.6 | 52.4 | 12.2 | 16.0 | 12.8 |
| 55 | Snowshoe Mesa | Snowshoe Cr. | " | 16mi.NE.Paonia | 14-13S-89W | 7500 | Gunnison | 26.5 | 22.3 | 21.4 | 6.6 | 4.6 | 4.1 |
| 58 | Ironton Park | Red Mtn.Cr. | " | 5mi.S.Ouray | 29-43N-7W | 9800 | Uncompahgre | 30.0 | 37.4 | 33.0 | 7.4 | 9.9 | 7.9 |
| 85 | Trickle Divide | Surface Cr. | " | 13mi.N.Cedaredge | 23-11S-94W | 10000 | Grand Mesa | 56.3 | 62.1 | 59.8 | 14.6 | 17.0 | 16.3 |
| 87 | Park Reservoir | " " | " | 11mi." " | 34-11S-94W | 9500 | " " | 51.7 | 58.6 | 54.3 | 13.6 | 16.1 | 14.8 |
| 89 | Porphyry Creek | Porphyry Cr. | " | Monarch Pass | 19-49N-6E | 10800 | Cochetopa | 41.7 | 43.6 | 46.3 | 8.9 | 10.4 | 8.8 |
| 94 | Sunshine Mt. No.2 | Henson Cr. | " | 10mi.W.Lake City | 35-44N-6W | 10200 | Gunnison | 30.9 | 30.4 | 34.5 | 6.8 | 6.5 | 7.4 |
| | | | | | Average for Drainage | | | 36.7 | 41.0 | 37.1 | 8.6 | 9.8 | 8.6 |
| | DOLORES RIVER | | | | | | | | | | | | |
| 23 | Rico | Dolores R. | Colo. | 2mi.S.Rico | 11-39N-11W | 8700 | Montezuma | 21.8 | 27.2 | 14.8 | 4.6 | 7.5 | 3.1 |
| 24 | Telluride | San Miguel R. | " | Telluride | 6-42N-8W | 8600 | " | 26.4 | 29.2 | 21.3 | 5.1 | 6.3 | 4.7 |
| 25 | Lizard Head | Dolores R. | " | 10mi.N.Rico | 24-41N-10W | 10300 | " | 38.0 | 51.2 | 33.7 | 8.6 | 10.8 | 7.7 |
| 90 | Lone Cone | Ground Hog Cr. | " | 16mi.N.W.Rico | 23-41N-13W | 8900 | " | -- | -- | 31.6 | -- | -- | 7.9 |
| | | | | | Average for Drainage | | | 28.7 | 35.9 | 23.3 | 6.1 | 8.2 | 5.2 |
| | SAN JUAN RIVER | | | | | | | | | | | | |
| 26 | Wolf Creek Pass* | Wolf Creek | Colo. | Wolf Creek Pass | 4-37N-2E | 10000 | Rio Grande | 47.6 | 66.8 | 44.1 | 12.9 | 18.3 | 11.7 |
| 29 | Upper San Juan | " " | " | 4mi.W.Wolf Cr.P. | 10-37N-1E | 10000 | San Juan | 56.5 | 79.6 | 52.4 | 15.3 | 21.3 | 14.6 |
| 30 | Silverton Sub.S. | Animas R. | " | 2mi.NE.Silverton | 10-41N-7W | 9400 | " " | 18.8 | 26.4 | 15.7 | 3.9 | 5.8 | 2.4 |
| 31 | Cascade | Cascade Cr. | " | 5mi.N.Electra L. | 12-39N-9W | 8850 | " " | 27.4 | 35.1 | 19.3 | 6.0 | 8.5 | 3.6 |
| 93 | Granite Peaks | Los Pinos R. | " | 11mi.NE.Columbus | 24-37N-6W | 7950 | San Juan | 12.9 | -- | 12.9 | 4.0 | -- | 4.0 |
| 17 | Chama Divide* | Amargo R. | N.Mex. | 6mi.W.Chama | 36.9N106.7W | 7750 | Off Forest | 23.4 | 32.5 | 13.1 | 5.8 | 9.0 | 3.3 |
| 18 | Chamita* | Navajo R. | " | 6mi.NW.Chama | 36.9N106.7W | 8500 | " " | -- | -- | 20.5 | -- | -- | 4.5 |
| | | | | | Average for Drainage | | | 34.7 | 48.1 | 28.9 | 8.8 | 12.6 | 7.1 |

*On adjacent drainage
@Average for period of record

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | State | Locality | Descrip- tion | | | Av. Snow Depth | | | Av. Water Content | | |
| | | | | | | | | Av.@ | 1941 | 1942 | Av.@ | 1941 | 1942 |
| | | | | | | | | In. | In. | In. | In. | In. | In. |
| | GILA RIVER | | | | | | | | | | | | |
| 11 | Frisco Divide | Blue River | N.Mex. | 6mi.S.Luna | 31-6S-20W | 8000 | Apache | 9.0 | 17.8 | 9.3 | 2.3 | 4.7 | 2.5 |
| 14 | State Line | " " | " " | Alpine/Luna | 6-6S-21W | 8000 | " | 12.3 | 24.4 | 12.7 | 3.1 | 6.1 | 3.3 |
| 22 | Taylor Creek | Taylor Creek | " " | 2mi.NE.Inmans | 20-10S-10W | 7850 | Gila | -- | -- | 0.0 | -- | -- | 0.0 |
| 3 | Nutrioso | San Fran.R. | Ariz. | 5mi.SE.Nutrioso | 23-6N-30E | 8500 | Apache | 11.0 | 16.2 | 6.7 | 2.8 | 5.0 | 2.2 |
| 4 | Beaver Head | Castle Cr. | " | 11mi.SW.Alpine | 13-4N-30E | 8000 | " | 17.5 | 27.1 | 13.4 | 4.5 | 6.7 | 4.8 |
| 5 | Coronado Trail | Coleman Cr. | " | 4mi.S. " | 26-5N-30E | 8000 | " | 16.9 | 27.9 | 13.5 | 4.4 | 6.8 | 4.3 |
| 6 | McNary | Salt River | " | 3mi.NW.McNary | 14-8N-23E | 7200 | W.M.Ind.Res | 15.0 | 18.3 | 7.8 | 4.1 | 6.3 | 2.6 |
| 7 | Forest Dale | " " | " | 5mi.SW.Showlow | 2-9N-21E | 6000 | " " " " | 2.9 | Tr | 5.8 | 0.8 | Tr | 1.7 |
| 8 | Trout Creek | " " | " | 3mi.SW.McNary | 5-7N-24E | 6400 | " " " " | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9 | Milk Ranch | " " | " | 4mi.W. " | 28-8N-23E | 7000 | " " " " | 8.0 | 10.5 | 5.6 | 2.6 | 3.3 | 1.9 |
| | | | | | Average for Drainage | | | 10.3 | 15.8 | 8.3 | 2.7 | 4.3 | 2.6 |